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PAPERS
IN
MANUFACTURES.

The SILVER MEDAL of the Society was this Session voted to Mr. EDWARD SMITH, of Brentwood, Essex, for Manufacturing from the Fibres of the common Nettle, Thread, and Articles resembling Flax, Hemp, Tow, and Cotton. The following Communications were received from him, and Specimens of the various Articles are preserved in the Society's Repository.

SIR,

I HAVE the honor to transmit to you a short memoir on that hitherto much-neglected and despised vegetable the nettle, with the general useful purposes to which the produce thereof may be applied. If you think it will merit any claim to the attention of the Society, I request you will do me the favor to lay it before them.

My attention was first directed to this matter about the year 1793, but from many impediments no favorable opportunity presented itself for particular investigations till about the year 1800, since which time, I have annually selected a few of the nettle plants from their various situations at different periods, in order to ascertain the state most congenial to the process, and that most suitable to the different purposes to which I thought them applicable. The result of my experiments has deeply impressed upon my mind, that they may be made subservient to national utility, particularly at the present period, when our foreign commerce is so generally impeded, and in consequence our supplies of foreign hemp and flax nearly annihilated.

I beg leave to observe that the growth of nettles is general, in every country, particularly in strong fertile soils, that on every bank, ditch, and place, which cannot be brought to tillage, they are produced in such abundance, that the quantity, if collected, would be of great magnitude.

The growth of them might be encouraged in such waste places, or a vast quantity of land of that description might, at a moderate expense, be made to produce a valuable crop of a useful article heretofore regarded as a nuisance. The shady places in woods, parks and coppices, are particularly favorable to their growth; I have found them in such situations in the greatest perfection in point of length and fibre. The harl, or fibre of them, is very similar to that of hemp or flax, inclining to either according to the soil and different situations in which they grow: I have ascertained as far as I have been able to proceed, that they may be substituted for every purpose for which hemp
or

or flax is used, from cloth of the finest texture down to the coarsest quality, such as sail-cloth, sacking, &c. and for cordage.

Another most material use, the magnitude of which, I trust will be duly estimated, is, that they may be applied to the manufactory of paper of various qualities. The impediments in foreign commerce has lately deprived us of a supply of linen rags, and occasioned a general use of cotton rags in the paper manufactory, which is injurious to the preservation of the most valuable works in literature, to the truth of which the observation of every one must bear testimony who has attended to the depreciated quality of writing and printing papers.

That the produce of nettles and the refuse of them from the manufactory, may easily be converted into writing, printing, and all inferior sorts of paper, I feel confidently assured. For the purpose of writing and printing paper they might be gathered twice in one season, as for those uses the length of staple is not required, and the fibre would be considerably increased in its fineness, and in point of colour either in the refuse or unwrought state, the chemical process of bleaching now in practice would render them a delicate white.

I have in possession some samples which have gone through a succession of processes similar to what are practised on hemp and flax, and I have without the aid of any implements brought them to a state of preparation ready for the hackle; but for want of that, and their being no flax or hemp manufactory in this neighbourhood, I have not been able to proceed further, but I judge that they are sufficiently advanced so as amply to evince the practicability above referred to.

If you think proper, I will transmit the samples for the Society's inspection, and give any further information in my power.

Permit me the honor to subscribe myself, Sir,

Your most humble Servant,

EDWARD SMITH.

Brentwood, Essex, March 24, 1809.

TO C. TAYLOR, M. D. SEC.

SIR,

I AM much obliged to the Society for their reference of my communication to one of their Committees. About ten years subsequent to my first observations, and three to my first experiments, I observed the following paragraph in the Chelmsford Chronicle, November 25, 1803. "The Society of Œconomy, at Haërlem, has offered prizes for the best memoir as to the particular species, the season for gathering, and the manipulation necessary in preparing nettles for use." This is the only account I have ever seen of them, and shows that such a matter was regarded as deserving the attention of that Society; but as I from the first had it in contemplation to present my observations on the subject to the Society of Arts, &c. and thinking the matter of great consequence, and wishing my own country to be benefitted by it, I declined answering the Haërlem advertisement.

My discovery of the properties of the nettle is original,
and

and arose entirely from my own observations on the apparent to hemp and flax, which I remarked they had when growing. I now transmit to you some samples, in different states, for the Society's inspection.

I have the honor to be, with great respect, Sir,

Your most humble Servant,

EDWARD SMITH.

Brentwood, March 28, 1800.

TO C. TAYLOR, M. D. SEC.

SIR,

I HAVE now the honor to transmit to the Society my further progress, viz. A sample of yarn which was prepared from the coarsest part of the nettle-produce, which I deemed less liable to be injured for want of knowledge in the manufacturing than the finer qualities. Since my former letters I have been bleaching some of the nettle-flax, and have brought it to so good a colour, that a preparation from it would produce paper perfectly white, and I have caused a sample of yarn to be made from the nettle-produce, both of which I have sent.

I likewise inclose an improved specimen of paper made from the same substance, also a preparation for paper, a part of the same sample the inclosed was made from, which is, of course, much inferior to what would be done by a paper-manufacturer; these samples having been made by
such

such rough instruments as were constructed by my own hands, and which of course the Society will consider.

I remain respectfully, Sir,

Your obliged humble Servant,

EDWARD SMITH.

Brentwood, Nov. 18, 1809.

TO C. TAYLOR, M. D. SEC.

The following Specimens, produced from Nettles by Mr. Smith, are deposited in the Housekeeper's Office.

Samples of the fibres, in their rough state, resembling different kinds of hemp and flax.

Samples of their fibres equal to the finest flax, and remarkably strong in texture.

Samples of very strong yarn, prepared from the coarsest fibres.

Samples of coarse paper, prepared from the rough refuse fibres.

Samples of the coarse fibres bleached white.

Samples of a substance resembling cotton prepared from the bleached coarse fibres.

Samples of white paper prepared by him from the last-mentioned substance.

Mr.

*Mr. Smith's Process for preparing various Articles
from Nettles.*

The kind of nettle capable of being manufactured into cloth, &c. it is scarcely necessary to say, is that which in general is denominated the stinging-nettle. The most valuable sort, which many years practical experience has furnished me with a knowledge of, in regard to length, suppleness, fineness of the lint, brittleness of the reed, which dresses most freely, with less waste of fibre, and yields the greatest produce of long and fine strong harl, I have found growing in the bottom of ditches amongst briars, and in shaded valleys, where the soil has been a blue clay or strong loam, but from which situations I have selected some which have measured more than twelve feet in height, and upwards of two inches in circumference. Plants growing in the situations above described are in general from five to nine feet in height, and those growing in patches on a good soil, standing thick, and in a favorable aspect, will average in height about five feet and a half, will work kindly, and the stems are thickly clothed with lint. Those which grow in poorer soils, and in less favorable situations, with rough and woody stems, and have many lateral branches, run much to seed, are stubborn, and work less kindly; they produce lint more coarse, harsh and thin. In every situation and different soil I have experienced the most productive nettles to be those which have the smoothest and most concave tubes, the largest joints, the fewest leaves, and which produces the least quantity of seed.

In gathering them, as they are perennial plants, I have preferred the mode of cutting them down, instead of pulling them up by the roots, which I recommend to be the practice,

tice, with a view to obtain a second crop where the situations will allow of it, and to secure the propagation of them the subsequent year.

The most favorable time for collecting them is from the beginning of July to the end of August, but it may be continued even to the end of October, only the lint of those which remain growing to that time will be less supple, and will not work so freely; and if the season happens to be unfavourable, it is probable there would not be sufficient time to steep and grass them, in which case they should be dried by the heat of the atmosphere, or if the state of the weather would not permit of that, then by means of artificial heat; and when dried they should be housed or stacked till the spring, when they might successfully undergo the same operation of steeping as those of the first collection. Such as grow in grass fields, where the grass is intended for hay, should be cut when the hay is cut, in order to prevent their being spoiled by the cattle when feeding; the harles of which would be fine in quality, and well suited to be wrought up with the second crop, and which crop may be obtained after those of the first cutting. where the situation will admit of their being preserved, the fine quality of such I ascertained last autumn, and found the height of them to average three feet and a half; they were gathered the latter end of November. The following are the processes adopted by me.

After the nettles are gathered they should be exposed to the atmosphere till they gain some firmness, in order to prevent the skin being damaged in the operations of dressing-off the leaves, the lateral branches and seeds, which should be done a handful at a time, and afterwards sorted, viz. those which are both long and fine by themselves, those which are both long and coarse by themselves, and those
which

which are short and coarse by themselves; then made up into bundles as large as can be grasped with both hands, a convenient size for putting them into the water, and taking them out, a place for that purpose being previously prepared, either a pond or a pit free from mud, or a brook or river. The bundles should then be immersed and placed aslant with the root end uppermost, and to prevent their floating on the surface some weight should be laid upon them.

The time required for steeping them is from five to eight days; but it is better they should remain rather too long in the water than too short a time, yet great care should be taken they are not over-done: when the fibre approaches to a pulp, and will easily separate from the reed, and the reed becomes brittle and assumes a white appearance, that operation is finished.

The bundles should then be taken out singly, very carefully, to avoid damaging the fibres, and be rinsed as they are taken out of the water to cleanse them from the filth they may have contracted; they must then be strewed very thin upon the grass, and be gently handled. When the surface of them is become sufficiently dry, and the harl has obtained a degree of firmness, they should be turned repeatedly till they are sufficiently grassed; the time required is known only by experience, so much depends on the state of the weather during the process; when they are sufficiently done, the hard blisters and the stems become brittle; they must then be taken up and made into bundles, and secured from the weather.

The harl is now to be separated from the reed, after the manner practised on flax and hemp, either by manual labor or machinery now in use in those manufactories. That operation

ration was performed in my experiments by hand, and with implements constructed by myself, but which I consider too simple here to describe.

The harl being separated from the reed it requires next to be beaten, that it may become more ductile for the operation of dressing, and which may be performed with such implements as are used for dressing flax or hemp.

This operation being accomplished, the produce of the nettles is arrived at a state ready for spinning, and may be spun into various qualities of yarn, either by hand, or by machinery constructed for the purposes of spinning flax or hemp, and which yarn may be successfully substituted for the manufacturing every sort of cloth, cordage, rope, &c. which is usually made from hemp or flax, and is particularly calculated for making twine for fishing-nets equal to the Dutch twine imported for that purpose, the fibres of the nettles being stronger than those of flax, and not so harsh as the fibres of hemp.

In the course of my experiments on nettles it often occurred to me, that the refuse, and such parts as were damaged in the different processes, with the under-growth, might be applied to useful purposes, and in addition to the nettle manufactory, as applicable to the purposes for which hemp and flax are used. Another source of productive labor of great magnitude would be derived from a new substance, capable of being converted into so many beneficial uses, if my speculations should be finally accomplished. In contemplating these subjects, I was induced to believe the refuse and under-growth might be converted into paper of various sorts, according to the changes they might be made to undergo from the several operations necessary to reduce them to a proper state for that use, having frequently observed, with regret,

regret, the deterioration in the quality of writing and printing-paper, occasioned by the use of cotton-rags in the paper manufactory, which evinces itself even to the most superficial observer, who may only casually open many of the modern publications, and which must be admitted is of the utmost moment, as it endangers the preservation of works of literature. Being convinced of the superior strength of nettle substance, I thought, could my speculations be reduced successfully to practice, it would not only remedy that great evil, and operate as an antidote to the use of cotton-rags in that part of the paper manufactory, but eventually effect a reduction in the prices of books, which for some years have been rapidly increasing, and are now become excessive, to the great obstruction of disseminating useful knowledge among mankind, and contributes to the diminution of our exports in that material branch of commerce.

In addition to the above incentives, the consideration of the high price of paper, chiefly occasioned, as I conclude, from the extravagant price of linen-rags, the impediments to the procuring a foreign supply of them, arising from the circumstances of the times; and seeing that the use of linen-cloth is in a great measure superseded by the very general introduction of cloth manufactured from cotton, which consequently must materially diminish the supply of linen-rags, and probably, in process of time, from the increasing substitution of cotton-cloth for linen, linen-rags, particularly the finer qualities, may be totally annihilated. Urged by all these considerations, which were forcibly impressed on my mind, and feeling assured of the practicability of reducing the substance of nettles to a state necessary to the production of paper, and confident in the superior strength of such paper, if it could be manufactured from a substance so substantial, I was most powerfully impelled to attempt to reduce

to practice what in theory I had so warmly cherished. The attempt was arduous, not only from an entire want of knowledge of the manufactory, and of the necessary utensils, but I was destitute of any proper implement to engage in the undertaking with any probability of success; hoping however by perseverance to succeed, I proceeded, and found on my first rough trial my expectations realized.

The most favorable condition of the lint, with a view to the paper manufactory, is to begin with it after it is hackled; in order that the fibres may be divested of the skins which inclose them, as when it is intended to make white paper, having gone through that process, it would greatly facilitate the bleaching, and be the more easily disencumbered of the gross particles.

When I signify as my opinion, that the fibres of nettles should be dressed the same as for yarn, previous to their being prepared with a view to the making of paper, I wish not to be understood to convey the idea that the operation cannot be dispensed with; because I conceive that by the aid of such machinery as is in use with the paper manufacturers, or by some improvements therein, they might be brought to a pulp easily, even when the nettles are first gathered, should it, with a view to saving of labor, be deemed necessary; but the practicability of which I leave to the experience which time may hereafter afford.

My operation of bleaching the fibres for paper was performed on the grass, which I deem preferable to the new mode of bleaching with water impregnated with air, by means of oxigenated muriatic acid gas, because the old mode of bleaching on grass, weakens the strength of the fibre, leaves it more flexible, and thereby expedites the maceration, which in some degree compensates for the time it requires longer than by the chemical process. But for bleaching of yarn

or

or cloth made of whatever substance, the chemical process, if scientifically conducted, experience has convinced me is pre-eminently superior, as it gives additional strength to the yarn, greater firmness to the texture of the cloth, and is an immense saving of time, labor, &c.

After the lint is bleached it should be reduced to a proper length for paper, and then macerated in water after the manner of rags, and undergo similar processes till the substance is converted into paper, which may be easily accomplished by manufacturers, and the substance of nettles made to produce paper of the first quality and the most substantial.

In my process the lint was reduced by scissors to particles as minute as was practicable with such an implement; then it was macerated in cold water about ten days, and brought as much to a pulp as could be effected without the aid of grinding, &c. Being a stranger to the composition used to procure the adhesion of the particles, if any is used for that purpose, I tried several glutinous substances, none of which answered so well as a solution of gum, but I am well aware that cannot be generally used, being too expensive.

After the pulp was impregnated with the solution, I then spread it thin on a wire frame of my own construction, which process, except drying it, with me was final. Not being possessed of the means of pressing the paper any more than grinding of the lint, and for want of the film which adheres to the lint being dressed off, I could not completely destroy the color, so as to produce a clear white without picking out every discolored particle, which I so well accomplished, that when I had reduced the staple in length, in that state it was perfectly free from color; the deterioration which ensued when converted into paper, was occasioned by the solution of gum.

My processes were the fruits of my own conceptions, and I desire it may not be understood that I presume to recommend them for practice, being conscious that the manufacturers of paper, hemp and flax, from analogy, are possessed of the knowledge of operations and means more consonant and infinitely superior.

These several manufactures from the new substance of nettles, patronized by the stimulating approbation and recommendation of the Society of Arts, &c. I with all due deference venture to predict will rapidly increase the capital of those individuals who engage therein, afford new employment to the poorer classes of society, and become a new source of wealth to the nation.

EDWARD SMITH.

Brentwood, April 28, 1810.

TO C. TAYLOR, M. D. SEC.

In the 25th Volume of the Society's Transactions, page 51, will be found a Communication from Mr. ALEXANDER DUFF, describing a very material Improvement made by him in the Draw-Boy, a Machine for Weaving Figured Silk Goods, for which Invention he received FIFTEEN GUINEAS from the Society in the Year 1807. As no Drawing accompanied Mr. Duff's Communication, the Society take the opportunity of explaining the same by means of the Drawings in Plate 4, which represents the Machine in a further state of Improvement by JOHN SHOLL, of No. 11, Elder-street, Norton-falgate, who was rewarded with FIFTEEN GUINEAS for the same last Session. The following Communications were received from him, and one of the Machines is preserved in the Society's Repository.

I HAVE used Alexander Duff's machine (made for the drawing of figures in the manufacture of silk goods) for nearly four years, and as its use is confined to one description of work, I have endeavoured to make this valuable machine of more general use by various alterations, which I submit to your examination.

JOHN SHOLL.

No. 11, Elder-street, Norton-falgate,
7th of 2d Month, 1810.

To the Society for the Encouragement of Arts, &c.

*Statement made by John Sholl of the Advantages of
his Machine over those at present in use.*

- 1.—The rack-tips are not liable to break.
- 2.—On the racks are cut a double set of teeth on the upper side for the purpose of working double the number of cords in the same space, which cannot be done by the old method.
- 3.—A moveable tooth prevents the necessity of cutting a tooth at the end of a comber figure.
- 4.—The pulley is put on at the end of the axle on the outside of the frame, by which the levers are shortened six inches, and much power gained.
- 5.—The pulley may be taken off and a winch put on, by which means a small boy may draw a work of any weight.
- 6.—By this method a careless boy is not liable to draw the wrong cord and spoil the figure.
- 7.—That with this machine the assistance of a boy, who can be hired for five shillings per week, will answer the purpose of a man at ten shilling per week.

CERTIFICATES in favor of John Sholl's machine were received from the following persons :—

JAMES SCRIVEN, No. 47, Gun-street, Spitalfields ;
 JOHN LIMERE, No. 8, Baen-street, Bethnal-green ;
 SAMUEL CEGAMBAR, No. 37, Slater-street, ditto ;
 THOMAS ATKINS, No. 60, Brick-lane, Spitalfields ;
 THOMAS ATKINS, Jun. ditto ;
 WILLIAM CARTER, No. 28 ditto ;

SAMUEL

SAMUEL ROSS, No. 22, Carter-street, Brick-lane ;
R. GRAHAM, No. 18, New Nichols-street, Bethnal-green ;
JOHN VANNET, No. 1, Neckles-row, ditto ;
JAMES VANNER, No. 11, Turvill-street, ditto ;
JOHN RANDELL, No. 35, Church-street, Mile-end ;
THOMAS COLE, at Messrs. Lane and Dalton's, Gutter-lane, Cheapside ;
WILLIAM SANFORD, at Messrs. Lea, Wilson, and Co. Old Jewry ;
JOHN KINCAID, Spital-square.

A CERTIFICATE from Mr. B. CHRISTMAS, No. 31, Steward-street, Spitalfields, stated, that he had examined John Sholl's drawing-machine, and thinks it one of the completest that has been made, as it will serve equally well for point or comber figures, by having the racks or saws with fine teeth, and that the edge of them is made secure by being capped with iron, which in the old ones frequently broke off, and that by placing the rigger or pulley on the outside the frame, it makes the working of it much lighter.

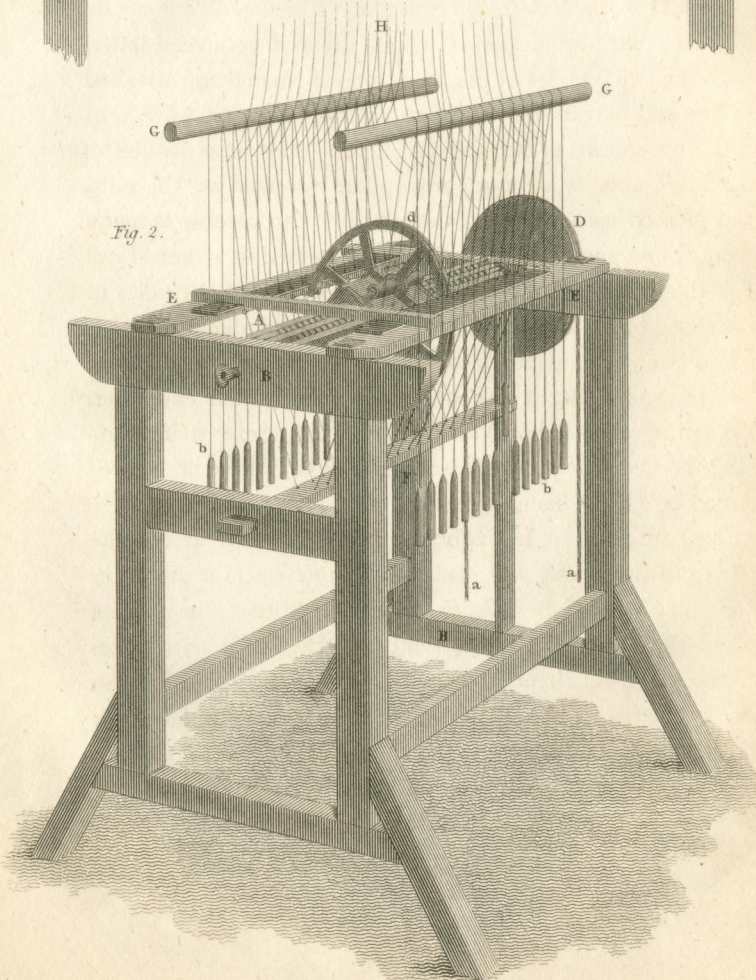
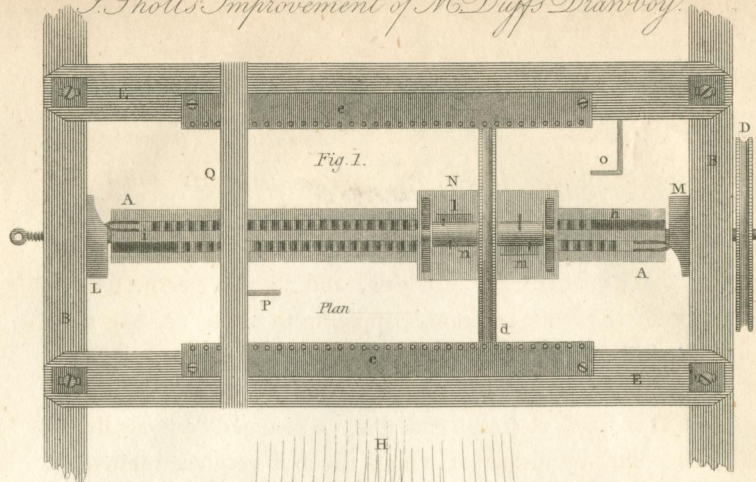
A CERTIFICATE from Messrs. Lea, Wilson, and Co. silk-manufacturers, Old Jewry, stated, that John Sholl had worked for them many years ; that they could testify to the utility of his improved machine for drawing figured works, as he had used it for several of their works, and was at that time drawing one of their rich satin damask shawls, fifty-four inches square, a work which they believe has been hitherto thought impossible to be drawn without the assistance of a second workman.

*Reference to John Sholl's Improvements in Mr. Duff's
Weaving-Machine, Pl. 4.*

Fig. 1 is a plan of the machine, and fig. 2 a perspective view of it, the same references applying to both. A A is a square wooden bar, mounted so as to turn backwards and forwards in the frame B B; on the point of one end of it a pulley D is fixed to receive a line *aa* fastened to it at the highest point, by means of which the axis receives motion from the two treadles of the loom, one of them being attached to one end of the line, and one to the other end of it, *aa*. E E are two rails of wood fixed across the frame parallel to the axis; and *ee* are two brass plates screwed to the rails, and pierced with a great number of holes to receive as many strings, one end of each of which is attached to a central rail F of the frame, and after passing through one of the holes in the above plate, and turning over a round wooden rod G, has a lead weight appended to it; these weights are shown at *bb*, (the rods G G are suspended by strings at their ends from the ceiling of the room); to each of the above strings another is tied just before it passes over G; these are represented by H, as hanging loosely, the upper ends of these strings are tied to horizontal strings extended across the ceiling of the room, and made fast at one end; at the other they pass over pulleys at the top of the loom, in a frame called the table of mullets, and have the lambs or heddles suspended from them; by this arrangement it will be seen that when one of the strings fastened at F is pulled down, it draws one of H, lifts one of the weights *b*, and raises such an arrangement of the lambs or heddles as is proper to produce the figure which is to be woven. The weight *b* draws the string so as always to keep it straight; all that is there-
fore

J. Tholl's Improvement of McDuff's Draw-boy.

Pl. IV.



fore necessary is, to draw down the threads at F successively, and raise a different series of the heddles each time; this is the business of the machine, and which it accomplishes in the following manner:—The bar or axis A A has an iron semicircle *d* grooved like a pulley, and each of its ends divided so as to form a clift-hook or claw; each of the strings made fast at F has a large knot tied in it, just beneath where it passes through the brass plate *e*, and which knot stops the farther descent of the weight *b*; now as the axis vibrates backwards and forwards by the treadles of the loom, as before-mentioned; the hook of *d* seizes one of the knots and draws down the string; the weaver throws the shoot and returns the treadles and axis A with the semicircle *d*, allowing the string to take its original position; when the semicircle *d* inclines over to the other side, its opposite hook takes hold of the thread which is next to the opposite one it just quitted, drawing it down, and then returns to the opposite, then to the next to opposite, and so on; this is effected by the semicircle sliding along its bar or axis every time, by means of two wooden racks, *h* and *i* in the plan, let into grooves in the bar or axis; these have teeth like saws, but inclining in contrary directions. The racks move backwards and forwards in their grooves the extent of a tooth at each vibration of the axis, by the action of two circular-inclined planes of iron fastened to the frame at L M, against which the ends of the racks are thrown by a spiral-spring concealed beneath each rack: the semicircle is fixed on a box or carriage N, which slides upon the axis, and has two clicks upon it, one at *l* falling into the teeth of the rack *h*, the other at *m* for the rack *i*; *n* is a roller fixed over the box, and connected with the two clicks by threads wound in opposite directions, so that one is always up and disengaged from its rack while the other is in action. O is a piece of wire

fixed to the frame so as to intercept a small wire projecting from the roller *n* when the axis is inclined, and turn the roller a small quantity. P is another wire for the same purpose, but fixed to a cross-bar Q, which is moveable, and can be fastened at any required place, farther or nearer from the end of the axis. Suppose the roller *n* to be in such position that the click *m* is down and *l* drawn up, the action will be as follows:—The semicircle first inclines to the direction of fig. 2, its hook taking down one string; during this motion the end of the rack *i* comes to the inclined part of the circular-inclined plane M, and moves by its spring towards D, the space of one tooth, which the click *m* falls into: on the return of the axis the rack *i* is thrust back, and the box N and semicircle with it towards L, causing the hook to take the next opposite string; in this manner it proceeds, advancing a tooth each vibration, till it gets so far that the tail of the roller *n* strikes against the pin P; this turns the roller over, raises the click *m*, and lets down the other *l* into the teeth of the rack *b*; this was all the time moving in a contrary direction to *i*, by its inclined plane L, but had no action, as its click *l* was drawn up; this being let down, the semicircle is moved back a tooth at a time towards M, until it meets O, which upsets the roller *m* and sends it back again.

The SILVER MEDAL of the Society was this Session voted to Mr. JOHN LOCKET, of Donnington, near Newbury, for weaving Damask Linen Napkins equal to Foreign. The following Communication was received from him, and a Napkin preserved in the Society's Repository.

SIR,

FROM the encouragement held out by the Society of Arts &c. for improvements in manufactures, I am induced to lay before them a napkin of my manufacture, which, after much labour and expense, is brought to greater perfection than any before manufactured in this kingdom. I flatter myself that it exceeds any manufactured in Scotland or Ireland. I have shewn it to judges, who are of the same opinion. I have been full thirty years in endeavoring to equal the foreign damask ; and it has cost me much money in forming the tackle for it. I have no doubt that the Society will see it in the light that it merits.

I am, with great respect, Sir,

Your humble Servant,

JOHN LOCKETT.

Donnington, March 11, 1810.

TO C. TAYLOR, M. D. SEC.

Explanation

Explanation of the Napkin.

THE warp of the napkin is formed of brown linen, and it is wefted with white, so that the figures or designs appear on one side brown, on the other white. In the centre of the napkin is an imperial eagle, with a coronet above it. It is beautifully bordered with representations of various flowers hanging in elegant festoons.

Any nobleman's coats of arms could be displayed on table-linen in a similar manner, or any kind of figure introduced.

In the 23d Volume of the Society's Transactions, Page 223, will be found an Account of the GOLD MEDAL of the Society having been voted to Mr. WILLIAM CORSTON, of Ludgate Hill, for a Substitute of his Invention for Leghorn Plait, for Hats, &c. The following Communication, on the full Establishment and Success of this Manufacture in England, has been since received from him.

DEAR SIR,

HAVING been honored, in May 1805, with the Gold Medal of the Society, for a substitute for Leghorn-plait for hats, it is with great satisfaction that I am enabled to inform you, that this country is now beginning to reap those advantages which I foretold to the Society six years ago, and that many hundreds of women and children are at present employed

employed in the various parts of the kingdom, in the manufacture of this article.

I sold to two persons, in less than two months, upwards of 5,000 scores, and had an order from a third for 2,000. But this bears but a small proportion to the demand, and evinces the truth of the statement I made of the great advantages likely to result from the introduction of this new branch of manufacture into this country.

In Joseph Lancaster's Book on Education, I have pointed out further advantages which may be derived by the country at large, from the cultivation of waste and barren lands for the production of the material of which the British leghorn is made. This has been proved by experiments which I have made on Bagshot Heath, by favour of the Earl and Countess of Harcourt, and in Bedfordshire, by the benevolence and public spirit of the Duke of Bedford, and on barren land in Norfolk, near my native place. Indeed no soil can be too barren for this purpose, provided the seed will lay. I have shewn that 2,000 acres might be annually cultivated in the growth of this article, and that a quantity of such land might in succeeding years be brought into more productive cultivation : but I am afraid that this plan is too simple to be adopted, although I cannot but yet hope that the agricultural societies of England will turn their attention to a plan which will bring waste lands into cultivation, and also provide employment for thousands of poor children. If Government would grant 3,000 acres of the land which lies waste on Bagshot Heath, for a few years, without any fine, and afterwards on an increasing rent, according to the improvements of the soil, I would raise, in *straw alone*, what should produce an article for industry for which upwards of 20,000*l.* would be paid annually for the employment of poor children. It is a pleasing sight for Englishmen to behold
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the superb buildings which are appropriated as asylums for the children of our soldiers and sailors; but in times like these, how desirable is it that buildings of only one story high should be erected in populous parishes, which might answer the double purpose of schools of industry and instruction, and thereby relieve parishes from the burthen of the maintenance of poor children, and also bring them up in habits of industry and sobriety. In this way thousands of children may be employed from seven years of age, until they arrive at an age sufficiently advanced to go out as servants.

As by the mere invention of the *splitting of a straw*, a source of employment has been discovered, which has increased the returns in that branch not less than 3 to 400,000*l.* annually, I feel myself urged to call the attention of the discerning part of the public to a new branch of industry, which I make no doubt will, in a very few years, add nearly an equal sum to the national industry, and also be a great means of bringing into cultivation thousands of acres of land now lying waste. Since the introduction of spinning by hand, no source of employment has been discovered which promises to afford occupation to so many thousands; spinning by hand has been superseded by the inventions of machinery, but I believe it to be impossible for machinery to absorb this branch of manual industry; the only spindles, wheels, or bobbins engaged in this work, will be, I trust, the fingers of little children.

Some persons may endeavor to cast a shade over these expectations by considering the prevalent attachment to the wear of straw hats as the whim of the day; but I believe that the superior comfort, in summer weather, arising from the wear of a light hat in preference to a heavy one, will induce gentlemen more and more to make use of the British
leghorn;

leghorn ; and as to the predilection of ladies for hats manufactured of split straw, I think I hazard very little in considering that as established ; and when to our home consumption is added a consideration of the demand for the East and West Indies, the coast of the Mediterranean and South America, I think myself very safe in asserting, that these manufactures will employ not less than 60,000 children.

Our poor's rates amount to more than 5,000,000*l.* per annum ; and there can be no remedy for so great a burthen equal to the setting the children of the poor to work, so that they shall earn their own bread, instead of being chargeable to the parish. It is true, that the demand for straw-plait has caused an increased quantity to be made ; yet the demand is still superior to the quantity ; and in the spring, the price often advances from 30 to 50 per cent. beyond its fair value, even allowing sufficient profit to the poor employed, and the dealer in the article. I believe, therefore, that this branch of manufacture is still in its infancy, and that it is likely to have great permanency ; and although it may, by some, be considered as an insignificant source of revenue, yet when it is considered that Providence has given us the means of improving the agricultural state of the kingdom, in raising the raw materials, and that so many thousands of our poor may be employed in its manufacture, I trust that every assistance will be afforded to so extraordinary a source of national wealth.

If any person should doubt my arguments, I will beg leave to state a fact in confirmation of my positions. I once had the curiosity to put into the scale some straw I was about to sell, and I found that it netted upwards of twenty-three pounds sterling per lb. weight. If therefore an article, which in its unmanufactured state is considered as of little worth, can, merely by the industry of children, be rendered

so valuable, I think I risk very little in affirming, that by the encouragement of the *British Leghorn*, together with that of *split-straw*, we gain a sure means of bringing our waste and barren lands into cultivation, and by the employment of our poor children, we acquire an infallible means of greatly diminishing our poor's rates.

In order that the British plait may equal the Italian in fineness, I particularly recommend that the rye should be sown on the most waste and barren land, without any reference to its produce but merely of the straw, the sale of which would afford ample remuneration ; and I should be happy to take the produce of from 50 to 100 acres of such land, provided it lay convenient to the place of my manufactory. By such means, the most unproductive wastes will become valuable, and a great source of advantage opened for the employment of young children, and persons incapable of hard work.

An opportunity is thus offered for benevolent persons to build cheap schools in villages, and assemble the children of the poor together, to whom literary instruction might be given, and the children enabled to earn their own bread ; and the whole effected at a trifling expense.

I flatter myself that it will give pleasure to the Society to find that I have not neglected an object which has merited their attention, and which will be the means of saving immense sums to this country, which have heretofore been sent abroad for the purchase of an article which our poorest lands and feeblest people can furnish.

I remain, Dear Sir,

Your obliged and obedient Servant,

WILLIAM CORSTON.

Ludgate Street, May 10, 1810.

To C. TAYLOR, M. D. Sec.